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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/803,105	03/12/2001	Mitsuyuki Fujibayashi	1272.C0451	6436

5514 7590 10/24/2002

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EXAMINER

MOUTTET, BLAISE L

ART UNIT PAPER NUMBER

2853

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/803,105

Applicant(s)

FUJIBAYASHI ET AL.

Examiner

Blaise L. Mouttet

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 29, 2002 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1, 3, 4 and 7-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Beauchamp et al. US 5,448,269.

Beauchamp et al. discloses, regarding claims 1 and 11, a printing apparatus and method for printing an image on a printing medium (40) while relatively moving printing

heads (102, 104, 106, 108), each provided with an array of a plurality of printing elements (the nozzle arrays shown in figure 16), and the printing medium (30) comprising:

a carriage (100) mounting said printing heads (102, 104, 106, 108) and movable relative to the printing medium (30) in a scanning direction crossing said plurality of printing elements as shown in figure 1;

detection means (200) mounted on said carriage (100) for detecting printing positions of an array of printed pixels corresponding to said array of said plurality of printing elements (column 5, lines 30-40);

control means (the processor on circuit board 170 as disclosed in column 5, lines 37-40) for controlling drive timing of said plurality of printing elements according to detection results of said detection means (200) so as to make printing positions of subsequently printed pixels close to a predetermined center position (the ideal position as shown in figure 17 and described in column 8, lines 30-58), said control means controlling the drive timing of said plurality of printing elements according to a difference in detection time, detected by said detecting means, of printed pixels printed by at least two of said plurality of printing elements (column 2, lines 46-54).

Regarding claim 3, the printing heads (102, 104, 106, 108) are detachably mounted as indicated by column 5, lines 5-7 and the detection means (200) is fixedly mounted to the carriage (100) as shown in figure 2.

Regarding claim 4, the carriage (100) is moved by motor (112) and the printing medium (30) is moved by media positioning system (150) as shown in figures 2 and 3.

Regarding claim 7, see figure 2 and column 8, lines 30-58.

Regarding claim 8, see figure 7 in which LEDs (232 , 234) are the light source and photodetector (240) is the photoelectric conversion device.

Regarding claims 9 and 10, see column 1, lines 22-30.

3. Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Gast et al. US 6,367,903.

Gast et al. discloses a printing method for printing an image on a printing medium (14) while relatively moving a printing head (22) provided with an array of a plurality of printing elements (figure 3) and the printing medium, comprising the steps of:

relatively moving the printing head (22) to the print medium (14) in a scanning direction crossing the array of printing elements so that an array of printed pixels corresponding to the printing elements is printed on the medium (figure 9, S100, column 5, line 65 - column 6, line 12);

detecting printing positions of the array of printed pixels by detecting printed pixels printed by any of the plurality of printing elements (figure 9, S102, column 6, lines 27-30); and

controlling drive timing of the plurality of printing elements according to detection results of the printing positions so as to make the printing positions of subsequently printed pixels close to a predetermined central position (figure 9, S104-S110, figures 15A and 15B), wherein said controlling step controls drive timing of the plurality of printing elements according to a difference in detection time, detected in said detecting

step, of printed pixels printed by at least two of the plurality of printing elements (column 6, lines 31-58, column 7, lines 35-43).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gast et al. US 6,367,903 in view of Pernier US 6,227,644.

Gast et al. discloses, regarding claim 1, a printing apparatus (10) for printing an image on a printing medium (14) while relatively moving a printing head (22) provided with an array of a plurality of printing elements (figure 3, column 1, lines 52-60) and the printing medium (column 1, lines 31-42), the apparatus comprising:

a carriage (20) mounting said printing head (22), and movable relative to the printing medium (14) in a scanning direction crossing said array of said plurality of printing elements (column 1, lines 38-42);

detection means (the line sensor) mounted on a scanning mechanism for detecting printing positions of an array of printed pixels corresponding to said array of said plurality of printing elements (column 6, lines 31-39), said detecting means detecting printed pixels by any of said plurality of printing elements (column 6, lines 49-58); and

control means (the control circuitry as shown in figure 11) for controlling drive timing of said plurality of printing elements according to detection results of said detection means so as to make printing positions of subsequently printed pixels close to a predetermined center position (figures 15A, 15B, column 7, line 46- column 8, line 8), said control means controlling the drive timing of said plurality of printing elements according to a difference in detection time, detected by said detection means, of printed pixels printed by at least two of said plurality of printing elements (column 6, lines 31-58, column 7, lines 35-39).

Regarding claim 2, both single pixel deviation correction and fractional pixel deviation correction are described in column 7, lines 3-21.

Regarding claim 3, the printing head (22) is replaceably mounted (column 1, lines 38-42, column 8, lines 15-16).

Regarding claim 4, the moving means for moving the carriage and transporting means for transporting the printing medium are shown in figure 1 and described in column 1, lines 30-42.

Regarding claim 5, see figures 1-3 wherein the plurality of printing elements (P1-P14) are shown to be arranged in a direction crossing the scan direction.

Regarding claim 7, a plurality of printing heads (22, 24, 26 and 28) are described in column 1, lines 30-42.

Regarding claim 8, the detection means comprises a light source (70) and a photosensor (72) (column 6, lines 31-39).

Regarding claim 9, the printing head is an inkjet head as described on column 1, lines 30-42.

Regarding claim 10, the inkjet head utilizes electrothermal converters (column 2, lines 1-5).

Gast et al. fails to disclose, regarding claims 1, 3 and 7, that the scanning detection means is mounted fixedly on the carriage that mounts the printing head.

Gast et al. fails to disclose, regarding claim 5, that the detection means have a plurality of detection elements arranged at predetermined positions of the carriage so as to be arranged along a specified direction crossing the scanning direction.

Perner discloses a scanning detection means (15) for the calibration of inkjet printing heads fixedly mounted on a carriage that mounts the printing heads so as to be arranged along a specified direction crossing the scanning direction (18) (figure 1, column 3, lines 20-28).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to include the detection means of Perner on the carriage mounting the printing heads of Gast et al.

The motivation for doing so would have been in order to individually sense the faults from each nozzle in the printing heads as taught by column 1, lines 57-67 of Perner.

Contact Information

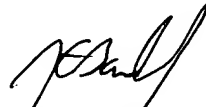
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet whose telephone number is (703) 305-3007. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow, Jr. Art Unit 2853, can be reached on (703) 308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet October 8, 2002

Bm 10/8/2002


John Barlow
Supervisory Patent Examiner
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